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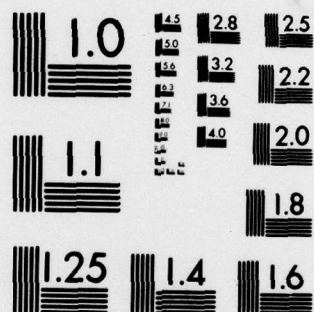
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By

Shih Lan



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EDITED TRANSLATION

FTD-ID(RS)T-0593-79

6 June 1979

MICROFICHE NR: *AD-79-C 000745*

SPACE WAR METEORS

By: Shih Lan

English pages: 12

Source: Hang K'ung Chih Shih, Nr. 8, August 1978,
pp. 7-9

Country of Origin: China

Translated by: LINGUISTICS SYSTEMS, INC.

F33657-78-D-0618

J. Wing

Requester: FTD/SDSS

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TRANSLATION DIVISION
FOREIGN TECHNOLOGY DIVISION
WP.AFB, OHIO.

FTD -ID(RS)T-0593-79

Date 6 June 19 79



SPACE WAR METEORS

Shih Lan

The arms race between the Soviet revisionists and the American imperialists is now extended from the ground to the outer space. As the techniques of space surveillance and anti-surveillance are constantly being developed, the race between these two super powers are becoming more and more intense. In the outer space far, far away, there is brewing a new kind of warfare -- space war. This article discusses some of the problems of the nature, methodology, attack courses, and objects in space war.

In the outer space, many artificial earth satellites of various sizes and shapes are constantly moving. They are carrying out the works of enemy intelligence surveillance, communications, and exploration of the earth's resources. At present, there are nearly one thousand satellites on orbits

from many nations. About two hundred of them serve directly for the military purposes. Almost all these military satellites were launched by the two super-grade countries of U.S.S.R. and U.S.A.

The super-grade espionage-surveillance satellites, or spy satellites, use their "seeing power" (photographic equipment) or electronic instruments to steal the enemy intelligence, and deliver it to the military's general staff. These space spies "stand" on the orbits several hundred to several thousand kilometers high and, night and day, spot and survey the opponent's military installations, weapon equipment, troop movements, defense constructions, launching of intercontinental guided missiles, and the courses of naval ships. They can obtain the intelligence which the conventional methods cannot gather.

The space espionage activities of a super power endanger the aggression and expansion interests of the other super power, block the evil plot of the other super power to dominate the world, and prevent the wild attempt of the other super power to monopolize the outer space. In the past several years, the two super-grade countries have twisted their brain powers to study the various measures to destroy space satellites, to attempt to attack and destroy the opponent's military satellites, and, principally, to spy on satellites. Thus, the once quiet outer space has now become a new battle field of the two super powers, and a new kind of warfare -- space war, is brewing. The enemies to be eliminated in a space war are the military satellites, manned space ships, satellite blockbusters, or orbiting (or partial orbiting) weapons. If a super-grade country attacks the spy satellite of the other super-grade country, it will likely trigger a space war.

At present, the two super-grade countries are launching

blockbusters one following another to the new battle field, to conduct various experiments in blocking targets on orbits. This is a dog-eat-dog fight between the imperialists, an arms race between the American imperialists and the Soviet revisionists, and also a competition of space weaponry between the two super powers.

The Formation of a Space War

In the uninterrupted development of space technology by the two super powers of U.S.S.R. and U.S.A., the military applications always remain the first considerations. On the one hand, much thoughts are given to utilizing fully the functions of the military satellites for attacking the enemy. On the other hand, various defensive measures are adopted to protect the military satellites from the attack by the opponent.

In using the military satellites, the super-grade countries are now constantly improving the workability of the satellites, making them better serve the military objectives and steal more intelligence. For example, a missile-early-warning satellite can more accurately detect the missile launching by the enemy. It will provide the information on the launching site and time of the enemy's missile for the military's general staff, and provide battle readiness for the anti-missile weapons on time. The navigation satellite can more effectively locate accurately submerged nuclear submarines and surface battle ships. The weather satellite can provide more accurate and reliable meteorological intelligence information for the military agencies.

Spy satellites use several methods to steal intelligence. More commonly used are the photographic surveillance satellites. This type of satellites takes pictures quickly in the upper sky over the other country and, in the upper sky over its own

country, send the intelligence back to earth. There are several methods of retrieving the intelligence. One is to retrieve the satellite's films directly and process them on the ground. Another method is to photograph in the sky, process the negatives on the satellite, convert the information into electric signals by electronic devices, and send the signals to the ground station. Still another method is television transmission of the photographed images through a transmitter.

To protect the spy satellites, the super-grade countries have adopted several methods, after some brain twistings. One, camouflaging. Several dummy surveillance satellites (also called baits) are launched to confuse the enemy. The real spy satellite is hidden. Or, a "dark" satellite is launched, which has its surfaces painted with a protective coating that absorbs electrical waves and which itself will not send out any radio signals. In this way, it is "camouflaged" and will not let the opponent discover and track it.

Two, raising the "survivability". Laser weapons can damage satellites severely, especially the solar batteries. Hence, a satellite may be equipped with a nuclear electric source or an isotope thermal-electric generator, in order to increase its survivability. The other parts of the satellite should also be protected by various means.

Three, using a warning system. To take care of a space attack, it is necessary to expand the sensitivity of the space tracking network, and make it into a warning system for space attack. When there is an early sign of a space attack, a warning signal of space attack will be set off.

Everything has contradictory sides. The appearance of an offensive weapon will induce the development of a defensive

weapon to counteract it. As the space surveillance activities of satellites and space ships intensify, the military communications increase, and the orbital bombing weapons appear, the methods to counteract these military activities are being devised one after another, and are constantly being developed. The continued improvements of the offensive methods and the defensive measures of space weapons promote the formation of a space war.

The defensive system to counteract space weapons must be able to discover the "enemy" (surveillance satellites, space ships, and orbital bombing weapons), early warn of the danger level of the "enemy", track and catch the "enemy" on time, and promptly destroy or incapacitate the "enemy".

The Methods and the Courses of Attack

In a space war, what methods will the two super-grade countries use?

The early method adopted was to launch a guided missile to destroy directly the military satellites in the space. The anti-missile guided missile system of the Soviet revisionists in the early period possessed the anti-satellite capability. The American imperialists also have studied the guided missile anti-satellite weapon system. Between 1962 and 1964, the American imperialists studied the Nike-Zeus anti-missile guided missile and the Thor-Agena guided missile, as the two basic anti-satellite weapon systems. Several tests were performed separately, and preliminary successes in blocking satellites were obtained.

Along with the development of space technology, the two super-grade countries become more intense in their arms race.

Besides studying the ground launching of guided missiles to block satellites directly, they seriously developed a mechanical satellite blockbuster (the so-called anti-satellite satellite) to destroy the opponent's satellite. Currently under study are principally a satellite blockbuster which will self explode when it is mechanically moved near the enemy's satellite, and will thus destroy the latter. Or, a satellite blockbuster, under the guidance of an automatic guiding device and accelerated by the rocket booster which it carries, will collide with the target at a high speed and become mutually destroyed.

In a space war, there are many ways to destroy a target. For example:

1. Using fragments to destroy. The satellite blockbuster is equipped with a guided missile which is launched toward the target. When it is near the warhead area of the target, it will explode, spraying a large amount of missile fragments toward the target and destroy it. Or, when the guided missile flies near the target, it will shoot out many bullets to destroy the target.

2. Using a laser weapon. A satellite blockbuster shoots a laser beam (laser weapon) at the target and either destroys it or destroys the electric source of the target. Of course, under the radiation of a high-intensity laser beam, the photographic equipment and the other electronic devices in a satellite will also be damaged, and the operability of the satellite will be lost.

3. Using a beam weapon. A charged-particle beam (beam weapon) is shot from the ground or from a space blockbuster to destroy the target. Charged particles (such as electrons or protons) through an accelerator will form a strong charged-particle beam which, shooting at near the speed of light, will

destroy the space target.

In addition, a cloud of sand or metal fragments may be spread on the flight orbit of the space target. This can also destroy the satellite. A strong magnetic or electric field produced artificially can also incapacitate the target. Some people had even postulated the use of a manned space ship or a controllable blockbuster (such as the space shuttle currently under study), with mechanical arms to "catch" the enemy satellite (Figure 1).

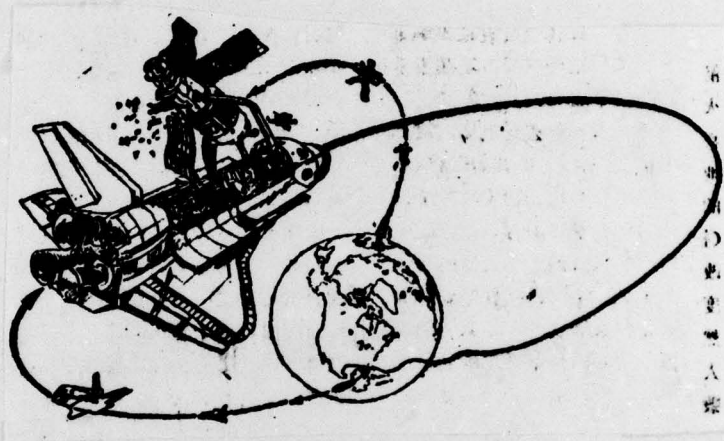


Figure 1. In a space war, the pilot cuts off the solar power panels of the enemy satellite and then puts the satellite into the cabin of the space ship by its remote-control mechanical arms.

The above methods generally are at the contemplation or experimental stage. They are still far from being practical.

For the major offensive methods in space war, consult the Table of Contents in this issue.

What courses will a blockbuster follow in attacking a target? Generally speaking, the attack courses differ for different methods of offense. Two are listed below:

One, head-on blocking (or confrontation). When the blockbuster enters the target's orbit, it meets the target head-on (face to face), and hits and destroys the target. See Fig. 2.

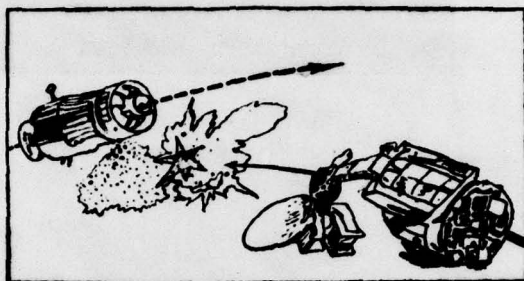


Figure 2. A blockbuster destroys a target head-on.

Two, tracking (or tailing). The blockbuster in a mechanical flight enters the target's orbit, quickly overcomes and destroys it.

Regardless which attack course to take, the blockbuster must be able to change orbits and make mechanical flights. (An anti-satellite guided missile blockbuster satellite has no such requirements. It may choose another style of attack. The article "Anti-Satellite Weapons" in the second issue of the year 1976 of this journal has an introduction.) Before attacking, it is necessary for the tracking network on ground and the blockbuster itself to determine constantly the position of the blockbuster, relative to the target, and its movement parameters, to estimate the vital point, to adjust on time the flight state of the blockbuster, to correct the flight path of the block-

buster, and to control the blockbuster in destroying the target accurately.

The speeds of a blockbuster and the target are very fast. The relative speed in a collision reaches twice the velocity of the satellite. Hence, when blocking a satellite, we should fully utilize this advantage to achieve the goal of destroying the target. If we spread a large layer of metal fragments in space, when the enemy satellite enters the layer at a speed of over ten kilometers per second, it will create much heat from the intense friction with the metal fragments and burn. Or, it will be damaged from the high-speed impact.

In the attack by tailing, the speed of the blockbuster relative to the target is low. However, the blockbuster on the orbit should be able to make mechanical flights and be able to accelerate or decelerate. Otherwise, the blockbuster will not be possible to catch the target.

The Blockbusters in Space War

What is a blockbuster in a space war?

The blockbuster in a space war is a flying vehicle which will directly execute the job of blocking. It may be an anti-satellite guided missile, a manned space ship, or an anti-satellite satellite. We discuss here only the blockbusters which move on orbits.

First, the blockbuster is launched by a multi-stage carrier rocket. The rocket (solid- or liquid-fuel multi-stage rocket) sends the blockbuster into the orbit (the satellite orbit) that evolves around the earth. This is the same as launching an artificial earth satellite. Then, dependent on the attack

object, an attack course is chosen. The blockbuster is "driven" (controlled) to change from the original orbit (by raising or lowering the altitude of the orbit and by altering the orbital plane) to follow the chosen attack course. When it gets near the target, it will suddenly attack the "enemy" -- a military satellite, and put it to death. This is a simplified process of destroying a target by a blockbuster. To accomplish the job, a blockbuster should be equipped with a controller, a stabilizer, a mechanical device, and tracking and measuring devices for the warhead and the target.

The major function of the controller in a blockbuster is to "drive" (control) the blockbuster to fly according to the chosen attack course, in order to achieve the goal of destroying the target.

The function of the stabilizer is to assure that the blockbuster will attain a stable position during the space flight.

The mechanical device provides mechanical power for the orbital motion and the stabilizer in a blockbuster. Commonly used at present is a booster motor or a small nozzle which is direction adjustable and can provide the power necessary for the mechanical motion and control.

The warhead is the real executor to damage or kill a target. Its job is to destroy or damage a target and incapacitate it. This warhead is wider in scope than the warhead in the conventional weapons. It may include a general warhead (with bullets or bomb fragments) or a nuclear warhead, laser weapons, beam weapons, and metal fragments.

To assure that the attack course can be accomplished, it is necessary to determine constantly the position of the block-

buster relative to the target and the motion parameters. This job is performed by the survey devices (such as radars). The radars in a space tracking network or in the blockbuster possess this capability. They can instantly transmit the information of the position and speed that they gather to the guidance system, so that the blockbuster will be guided to fly following the attack course, and hit the target accurately.

The Busy Exercises of Space War

Currently, the two super-grade countries monopolize the space in their struggle to gain world domination. Before any space war starts, there is a race of space weaponry. The Soviet revisionists and the American imperialists are hurriedly staging a show of space arms expansion and war preparation.

Starting from October 1968 to the end of 1971, the Soviet revisionists had conducted eight tests of blocking satellites. In the early testing period from October 1968 to October 1970, four tests were made. The other four tests, all conducted in 1971, were at the experimental stage of practical weapons, and their objective was to improve and perfect the anti-satellite weapons. In these tests, the satellites were as near as five to six hundred kilometers from the ground, and as far as five hundred to one thousand kilometers from the ground. Apparently, the Soviet revisionists had the objective of attacking various surveillance satellites on low orbits and guided satellites on higher orbits.

From early 1976 to October 27, 1977, the Soviet revisionists further tested blocking satellites seven times. The testing procedure was as follows. A "universe" type satellite was launched to the orbit and accurate orbiting parameters were obtained. Several days later, another "universe" type sate-

llite -- satellite blockbuster, was launched. Then the orbit changing mechanism in the satellite blockbuster was controlled to track the first satellite. The results from several tests indicated that the Soviet revisionists' anti-satellite weapon system is entering an application stage, and its capability is constantly being raised to attain the ability to block a satellite on an orbit synchronous with the earth (at an altitude of about 36,000 kilometers).

The American imperialists conducted research works on anti-satellite weapons in the sixties. Because of the economic depression and other factors, the works were forced to stop. But, the technology necessary for various subsystems in the anti-satellite weapons, such as tracking, identification, approach, and destroying, was still under continued study. The Soviet revisionists' accelerated anti-satellite weapon testings excited the American imperialists. So, the latter resumed anti-satellite testings in 1972, and experimented in the areas of watching, attacking, and destroying enemy space targets. According to the news media abroad, in September 1977, the American imperialists' air force had signed a \$58,700,000 contract with Ward (?) Company in Dallas to produce weapons for destroying satellites. The American imperialists are catching up fast. The two super powers are competing in the space weapons race field; no one wants to be behind.

Why are the two super-grade countries so busy in the space "war preparations" ? The reason is that the two super powers want world domination and space monopoly. But, history has proven that imperialism and the reactionary factions all are paper tigers. One of these days, they will be overthrown by the revolutionary people. The science and technology created by the people will belong to the people.

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